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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPEAL BRIEF ON BEHALF OF ROBIN BUDD, ET AL. PURSUANT TO 37 C.F.R. 1.192

Applicant : Robin Budd, et al.

Serial No. : 09/895,466

Filed : June 29, 2001

Title : METHOD AND APPARATUS FOR PROVIDING CONTINUOUS COMMUNICATION BETWEEN COMPUTERS

Group Art Unit : 2182

Examiner : Casiano, Angel L.

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ATTENTION: Board of Patents Appeals and Interferences

Dear Sir:

This is an Appeal Brief in connection with an Appeal from a final rejection decision of the Primary Examiner dated May 18, 2005 in the above-identified application. A Notice of Appeal was filed on July 8, 2005.

Applicant: Robin Budd, *et al.*
U.S.S.N.: 09/895,466
Filing Date: June 29, 2001
EMC Docket No.: EMC-00-066

Table of Contents

The final page of the Arguments bears the practitioner's signature.

(I)   Real Party in Interest

The real party in interest is EMC Corporation, a corporation existing by virtue of the laws of the Commonwealth of Massachusetts.

(II)   Related Appeals and Interferences

Applicants are unaware of any related appeals or interferences involving the instant appeal which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending action.

(III)   Status of Claims

Claims 1-16 were originally pending in the above-identified Patent application. Claim 7 has been canceled. Claims 1-6 and 8-16 are still pending and have each been rejected. Claims 1-3 have been rejected under 35 USC 103(a). Claims 4-6 and 8-10 have been rejected under 35 USC 103(a). Claims 11-16 have also been rejected under 35 USC 103(a). No claim has been allowed.

(IV)   Status of Amendments

A listing of the claims, as amended by the above-referenced amendment, is entered as an Appendix to this Appeal at section (X). Claims 1, 4, and 8 have now been amended by Applicants' paper mailed on February 28, 2005 which was filed in response to the Examiner's non-final office action which was mailed on November 29, 2004. Now the claims have been twice and finally rejected so this appeal is timely as required under 37 CFR 1.191.

(V)   <u>Summary of Claimed Subject Matter</u>

The present invention as claimed in independent Claim 1 is directed to a method for providing continuous availability of network information without use of the network in a computer system having a plurality of computers connected to a storage system. Each computer has software capable of sending and receiving network information applications (software) in communication with a storage system.

The method in Claim 1 specifies receiving transmission packets into an internal thread of the network and placing the transmission packets into a queue determined by the type of transmission packet. If the transmission packet is a write packet, transmission packets are copied into a buffer. Once the buffer is filled to a predetermined point an internal thread is wakened to process the filled buffer. The internal thread writes the contents of the buffer to the storage system. In this way network information is made available without the network.

The present invention in independent Claim 11 is directed to a method in a computer system having a plurality of applications (software) in communication with a storage system. In the invention each application software has a process capable of sending and receiving information over a network to and from the plurality of other software applications, and what is provided is a method for providing continuous availability of the network information When it is recognized that the network between the applications is unavailable, the network information is written to one of the applications to a storage volume on a storage system and then copied to another storage volume from where it is read.

(VI)   Issue on Appeal

A. Whether Claims 1-3 are unpatentable over Tsai (U.S. Patent No. 5,948,079) in view of Webber (U.S. Patent No. 6,529,518) under 35 USC § 103(a); and

B. Whether Claims 4-6 and 8-10 are unpatentable over Tsai in view of Webber and further in view of Lozowick (U.S. Patent No. 5,228,083) under 35 USC § 103(a); and

C. Whether Claims 11-16 are unpatentable over Tsai in view of Lozowick (U.S. Patent No. 5,228,083) under 35 USC § 103(a).

(VII)   Grouping of Claims

For each of the issues outlined below, there are groups of claims that can be considered to stand or fall together. It should be appreciated that such groupings are made solely for the purposes of this appeal, and relate only to the rejections applying to a particular group, such that the claims within a particular group may be separately patentable in other respects.

Group 1: Claims 1-10 are separately patentable; and
Group 2: Claims 11-16 are separately patentable.

(VIII)   Arguments

A.   General Overview of Applicants' Arguments

The Examiner has rejected Claims under 35 U.S.C. 103(a) as being unpatentable over Tsai in view of Webber for Claims 1-3 of Group 1, and further in view of Lozowick for Claims 4-6, and 8-10, also of Group 1. For Group 2 (Claims 11-16), the Examiner has rejected the Claims of Group 2 for being obvious over Tsai in view of in view of

Lozowick. In general, the Examiner has not met his burden of establishing a prima facie case of obviousness for any of the claims in any of the Groups 1-2.

Three basic criteria for establishing a prima facie case of obviousness are set out at MPEP 2143. First, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations. The teaching or suggestion to make the modification and the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) cited at MPEP 2143.

Here the first test is clearly not met. With Regard to Group 1, Applicants agrees with Examiner that Tsai "fails to teach the step of upon filling the buffer to a predetermined point, waking the internal thread to process the filled buffer, wherein the internal thread writes the contents of the buffer to the storage system, as claimed." The Examiner incorrectly alleges that the Webber reference teaches "a buffer in a network system (see col. 9, lines 15-19) where upon reaching a predetermined point (e.g. 'one quarter full') it is emptied." Applicants respectfully submit that the Examiner may have misunderstood Webber's teachings, points out that what Webber states at the cited location is:

> "In order to maximize network utilization, the first requesting adapter may de-assert its pause request when its bypass buffer reaches a threshold level, such as one-quarter full, rather than waiting until its bypass buffer is completely emptied." (Emphasis added, Webber Col. 9, lines 15-19).

Webber in fact teaches away from processing a filled buffer and writing the contents of the buffer, instead it merely teaches not waiting on its bypass buffer to empty before de-asserting a pause request. Applicants' invention on the other hand deals directly with the contents of a buffer by using an internal thread to write the contents of the buffer to a storage system.

The Examiner has asserted in an Advisory Action mailed August 2, 2005, that Webber does not teach away "from processing a filled buffer and writing the contents of the buffer." To support this argument, the Examiner points to teachings of Webber at Col. 3, lines 10-19. First of all, the Examiner is respectfully reminded that Applicants claim waking an internal thread to process the filled buffer and writing the contents of the buffer to the storage system. At the passage cited by the Examiner (Col. 9, lines 13-19) in the Final Office Action, it is clear that Webber does merely teach waiting until its bypass buffer is emptied. This is a passive move that does nothing to solve the problem solved by Applicants' claimed invention. The other teaching of Webber at the newly cited passage (Col. 3, lines 10-19) does not obviate the first teaching away because it merely instructs that the risk of overflowing a bypass buffer can be handled by suspending transmission of data packets until the bypass buffer is empty. This is still a teaching of passively waiting for the buffer to empty itself, rather than teaching the Applicants' active step of waking an internal thread to process the buffer and write the contents to the storage system. Moreover, the writing to the storage system done by Applicants' invention is important to accomplish the objective of Applicants' claimed method, which is to provide continuous availability of network information with use of

the network. The thread emptying the buffer and writing the contents to the storage system accomplishes this. There is no teaching or suggestion in Tsai and/or Webber of such an achievement.

The combination of Tsai and Webber do not teach or suggest this claimed limitation in Applicants' Claim 1 and accordingly the first test of a prima facia case of obviousness is not met for Claim 1. Since Claims 2 and 3, both depend from Claim 1 and inherent all of its limitations a prima facia case of obviousness is not met for these claims either under the first test.   Also, since Claims 4-6, and 8-10 both depend from Claim 1 and inherent all of its limitations a prima facia case of obviousness is also not met for these claims either under the first test, nor does the teaching of Lozowick make up for the shortcomings of Tsai and Webber as will be discussed in the detailed arguments for Group 1 below.

With Regard to Group 2, wherein Claims 11-16 have been rejected for obviousness of Tsai over Lozowick, the Examiner has similarly failed to establish a prima facia case of obviousness. Applicants' invention in Claim 11 is a method for providing continuous availability of network information, wherein a process recognizes that a network is unavailable and then writes the network information to an application to a storage volume on the storage system from where it is copied and read. Tsai teaches placing transmission packets into a queue according to the type of packet, and does not teach or suggest recognizing that a network is unavailable and reacting as claimed by Applicants and described above. Lozowick teaches using a buffer for storing packets. The combination of the two do not teach or suggest Applicants' invention. Nor is there

an expectation of success at teaching the achievements of Applicants' specified invention

in Claim 11. Accordingly, the prime facia tests are not met for this independent claim,

nor for its dependent claims 12-16, which inherit all the limitations of Claim 11.

B. Detailed Argument for Patentability of each Claim by each Claim Group

1. Group 1: Claims 1-3 are not rendered obvious by Tsai in view of Webber and

Claims 4-6 and 8-10 are not rendered obvious by Tsai in view of Webber and further in

view of Lozowick.

Group 1 is separately patentable from other groups being directed to a method for

providing continuous availability of network information in a computer system having

computer connected to a storage system. Transmission packets that are written are placed

on a buffer, which is served by an internal thread that is wakened to process the buffer

and write its contents to the storage system. In this way, network information is made

available without the network.

The Examiner has rejected Claims 1-3 under 35 U.S.C. 103 (a) as being

unpatentable for obviousness over U.S. Patent No. 5,948,079 (Tsai) in view of U.S.

Patent No. 6,529,518 (Webber).   Applicants respectfully submit that this rejection should

be removed because the Examiner has failed to make a prima facia case of obviousness,

which requires three basic criteria that must be met. First, the prior art reference or

combination of references must teach or suggest all the claim limitations. Second, there

must be some suggestion or motivation, either in the reference itself or in the knowledge

generally available to one of ordinary skill in the art, to modify the reference or

combination of references. Third, there must be a reasonable expectation of success. The teaching or suggestion to make the modification and the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure. Please see MPEP 2143.

Here the first test is clearly not met. Applicants agree with Examiner that Tsai "fails to teach the step of upon filling the buffer to a predetermined point, waking the internal thread to process the filled buffer, wherein the internal thread writes the contents of the buffer to the storage system, as claimed." The Examiner incorrectly alleges that the Webber reference teaches "a buffer in a network system (see col. 9, lines 15-19) where upon reach a predetermined point (e.g. 'one quarter full') it is emptied." Applicants respectfully submit that the Examiner may have misunderstood Webber's teachings, points out that what Webber states at the cited location is:

> "In order to maximize network utilization, the first requesting adapter may de-assert its pause request when its bypass buffer reaches a threshold level, such as one-quarter full, rather than waiting until its bypass buffer is completely emptied." (Emphasis added, Webber Col. 9, lines 15-19).

Webber in fact teaches away from processing a filled buffer and writing the contents of the buffer, instead it merely teaches not waiting on its bypass buffer to empty before de-asserting a pause request. Applicants' invention on the other hand deals directly with the contents of a buffer by using an internal thread to write the contents of the buffer to a storage system. The Examiner's arguments counter to this teaching away are respectfully traversed and have been presented above in the overview section of this argument.

The combination of Tsai and Webber do not teach or suggest this claimed limitation in Applicant's Claim 1 and accordingly the first test of a prima facia case of

obviousness is not met for Claim 1. Since Claims 2 and 3, both depend from Claim 1 and inherent all of its limitations a prima facia case of obviousness is not met for this claims either under the first test.

Nor are the second and third test met, because without the claim limitations being taught or suggested by Tsai or Webber there is no motivation to combine the two, nor would there be any reasonable expectation of success at reaching Applicants' invention on making such a modification because a combination of Webber which teaches de-asserting a pause request with Tsai which Examiner agrees does not teach limitations of Applicants' invention could not be expected to yield the limitations discussed with reference to the first test above. Accordingly, Applicants respectfully submit that the obviousness rejection of Claims 1-3 is unwarranted and removal of this rejection is respectfully requested.

The Examiner has rejected Claims 4-6 and 8-10, all of which depend on Claim 1, for obviousness under 35 U.S.C. 103(a) over Tsai in view of Webber and further in view of U.S. Patent 5,228,083 (Lozowick). Applicants respectfully submits that this rejection should be removed because the Examiner has failed to make a prima facia case of obviousness for the reasons made out above with regard to Claim 1. Since there are compelling reasons for removing the rejection of Claim 1, as described above, the rejection of all of its dependent claims, including Claims 4-6 and 8-10 should be removed. Accordingly, Applicants hereby respectfully requests removal of the rejection of Claims 4-6 and 8-10.

2. Group 2: Claims 11-16 are not rendered obvious by Tsai in view of Lozowick

Group 2 is separately patentable from each other group wherein each pending claim in this group is directed to a method in a computer system having a plurality of applications (software) in communication with a storage system. The method provides continuous availability of network information by writing such information to the storage system when it is recognized that the network is not available.

The Examiner has rejected Claims 11-16 for obviousness over Tsai in view of Lozowick. Applicants respectfully submits that this rejection should be removed because the Examiner has failed to make a prima facia case of obviousness under the three tests from the MPEP cited above.   The Examiner has mischaracterized Applicants' claimed invention in Claims 11-16 in the following assertion made by the Examiner at page 6 of the Office Action:

> "Therefore, one of ordinary skill in the art would have been motivated to modify the Tsai et al. reference in order to implement an optimized data processing method for the event of network disconnection, as taught by Lozowick et al.).

This is a mischaracterization because what Applicants claim in Claim 11 does not specify an "optimized data processing method," rendering such references as the Examiner has made to Tsai's communication optimization for different speeds in data transmission cited by the Examiner as irrelevant and not applicable to Applicants' invention.

Applicants' invention at independent Claim 11 is directed to a computer system having a plurality of applications (software) in communication with a storage system. In the invention each application software has a process capable of sending and receiving

information over a network to and from the plurality of other software applications, and what is provided is a method for providing continuous availability of the network information. When it is recognized that the network between the applications is unavailable, the network information is written to one of the applications to a storage volume on a storage system. On the other hand, Tsai's method for receiving transmission packets and placing into a queue determined by the type of transmission packet has nothing to do with recognizing that a network is unavailable and writing network information into a storage system storage volume then copying such information to another storage volume as in Applicants' claimed invention. In this way the storage system and its storage volumes are used to make network information continuously available with Applicants' invention. Lozowick's teaching of use of a buffer for storing packets does not in combination with Tsai teach or suggest the method of recognizing that a network is unavailable and in response taking actions involving application software and data storage volumes, wherein the redundancy of data storage volumes is used for continuous availability of network information. The combination of the two do not teach or suggest Applicants' invention. Nor is there an expectation of success at teaching the achievements of Applicants' specified invention in Claim 11. Thus the first test of a prima facia case of obviousness is not met. Accordingly, Applicants respectfully submit that the obviousness rejection is unwarranted and removal of this rejection and allowance of Applicants' Claim 11 and all of its dependent claims 12-16 is hereby respectfully requested.

(IX)   Conclusion

For the reasons given above, Applicants respectfully assert that the rejection of all pending claims is unwarranted and improper.   Accordingly, Applicants respectfully request removal of the obviousness rejection of Claims 1-3 over Tsai in view of Webber, Claims 4-6 and 8-10 over Tsai in view of Webber and further in view of Lozowick, and allowance of these pending claims, and also for the removal of the obviousness rejection of Claims 11-16 over Tsai in view of Lozowick.

Respectfully Submitted,

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(X) APPENDIX: CLAIMS INVOLVED IN THIS APPEAL

1.   (Previously Amended) In a computer system having a plurality of computers connected to storage system, each computer having software capable of sending and receiving network information, a method for providing continuous availability of the network information without use of the network comprising the steps of:

receiving transmission packets into an internal thread of the network and placing the transmission packets into a queue determined by the type of transmission packet;

if the transmission packet is a write packet, copying the transmission packets into a buffer;

upon filling the buffer to a predetermined point, waking the internal thread to process the filled buffer, wherein the internal thread writes the contents of the buffer to the storage system.

2.   (Original) The method according to claim 1, further comprising the step of:

prior to the internal thread receiving transmission packets, a client thread submitting the transmission packets into a write buffer.

3.   (Original) The method according to claim 1, further comprising the step of:

calling, by the client thread an transport data function, wherein the transmission packets are extracted from the buffer.

4.   (Previously Amended) The method according to claim 1, further comprising the

steps of:

preconfiguring the software such that upon the unavailability of the network, the

transmission packets are written by the software to a data storage system.

5.   (Original) The method according to claim 4, further comprising the steps of:

configuring the storage system to include a receive volume and a send volume,

wherein the contents of the buffer are written to a send volume;

copying the contents of the send volume to the receive volume.

6.   (Original) The method according to claim 5, wherein the receive volume and the

send volume are respectively located on first and second logical volumes of the storage

system.

7.   Canceled

5   8.   (Previously Amended) The method according to claim 4, further comprising the steps

of:

configuring the storage system to include a send volume,

configuring a second storage system to include a receive volume, wherein the second

storage system is geographically removed from the storage system;

10   writing the contents of the buffer to the send volume; and

copying the contents of the send volume to the receive volume.

9.   (Original) The method according to claim 8, further comprising the step of:

returning the internal thread to a sleep state, after the contents of the buffer are written

15   to the send volume.

10.   (Original) The method according to claim 9, wherein the copying of the contents of

the send volume to the receive volume occurs upon a command from one of the plurality of

20   computers.

11.   (Original) In a computer system having a plurality of applications, in communication

with a storage system, each application having a process capable of sending and receiving

information over a network to and from the plurality of applications, a method for providing

25   continuous availability of the network information comprising the steps of:

recognizing that the network between the applications is unavailable;

5   in response to the unavailability of the network, writing the network information from

one of the applications to a first volume;

copying the network information written to the first volume to a second volume

system;

reading the network information from the second volume.

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12.   (Original) The method according to claim 11, wherein the network information is read

by the second volume in less than a predetermined period of time after it is written to the first

volume.

15   13.   (Original) The method according to claim 11, wherein the plurality of applications

performs clustering functions.

14.   (Original) The method according to claim 11, wherein the plurality of applications

performs internet browsing functions.

15.   (Original) The method according to claim 11, wherein the network is the internet.

16.   (Original) The method according to claim 11, further comprising:

a second storage system geographically remote from the storage system, wherein the

first volume is on the storage system and the second volume is on the second storage system.

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